Investigating Map Reading in Lab & Online User Experiments

Bradley Denney – Bespoke Maps & Data
Dr Amy Griffin – RMIT University
Dr Zdeněk Stachoň – Masaryk University

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ICA Workshop on Adaptable Research Methods
Outline

1. Background
2. Experimental Design
3. Method
4. Results
5. Discussion
6. Conclusion
Background

Cultural differences in cognition:
• East vs West
• Global vs Local

Does this apply in cartography?
• Adaptive maps?
Background

Cultural differences in cognition:
• East vs West
• Global vs Local

Does this apply in cartography?
• Adaptive maps?

Chua, Boland & Nisbett 2005, p. 12630
Experimental Design

- 2 participant groups – Australian & Chinese
- 2 tasks – Cognitive style and map reading
- 2 stimuli sets – Global & Local
- ≥40 participants for each factor
- ≥160 participants in total
  1. Demographic questionnaire
  2. Tasks
Experimental Design

- 2 participant groups – Australian & Chinese
- 2 tasks – Cognitive style and map reading
- 2 stimuli sets – Global & Local
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  1. Demographic questionnaire
  2. Tasks
But then...

COVID-19
Method – Recruitment

Australian data collected online

- Prolific - Demographic screening
- Qualtrics - Screening study
- £0.25 (US$0.45)
Method – Experiment

Australian data collected online

- Qualtrics - Hardware testing
- Hypothesis - Cognitive testing
- £9 (US$12.50)
## Results – Experiment

### Cognitive Test

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>216 ms</td>
<td>166 ms</td>
</tr>
</tbody>
</table>

### Map Reading Task

#### Iconic

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>388 ms</td>
<td>184 ms</td>
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</table>

#### Schematic

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>China</th>
</tr>
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<tbody>
<tr>
<td>SD</td>
<td>456 ms</td>
<td>399 ms</td>
</tr>
</tbody>
</table>
Results – Demographic

Australian

Bachelor Degree or higher

Certificate or Diploma

Year 10

Year 12

Chinese

Year 12

Australian (PC level)

Great

Somewhat good

Low, 0%

Chinese (frequency of PC use)

Almost never

Every day

Rarely

Often

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## Discussion – Online Collection

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>• Diverse participants</td>
<td>• Differing demographics</td>
</tr>
<tr>
<td>• Able to screen participants</td>
<td>• No eye-tracking data</td>
</tr>
<tr>
<td>• Delivery through pandemic</td>
<td>• Less controlled environment</td>
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Conclusion

- Online methods are valuable in pandemic
- Need a lot of user testing
- Data from both methods can be compared
- Balance between comparability and representativeness
References


Questions?